

## CLAIMS:

1. An optical current sensor for responding to a current in a conductor  
5 comprising:  
a modulator having magneto-strictive properties;  
first means affixed to said modulator for providing an output proportional to the  
current in the conductor; and  
second means for coupling the magnetic field generated by the current in the  
10 conductor to said modulator and linearizing the output of said first means by providing  
both DC magnetic bias and mechanical prestress bias to said modulator.
2. The optical current sensor of claim 1 wherein said first means includes  
two or more tunable fiber optical filters and the output of said first means is formed by  
15 contribution from each of said tunable fiber optical filters.
3. The optical current sensor of claim 1 wherein said second means defines  
a magnetic path and includes a permanent magnet arranged in said magnetic path.